WHAT IS CLAIMED IS:

1. A method for measuring a position of a micro machined optical element, comprising:
   a) disposing at least one magnetic sensor on the micro machined optical element;
   b) exposing the at least one magnetic sensor to a magnetic field; and
   c) measuring a change in a property of the at least one magnetic sensor as the position of the micro machined optical element changes.

2. The method of claim 1 wherein the magnetic sensor senses a magnetic field that is used to actuate the micro machined optical element.

3. The method of claim 1 wherein the micro machined optical element includes a moveable portion and the at least one magnetic sensor is disposed on the moveable portion.

4. The method of claim 3 wherein the at least one magnetic sensor is selected from the group consisting of, magneto resistive sensors, giant magnetoresistance sensors, colossal magnetoresistance sensors, anisotropic magnetoresistance sensors, magnetic tunnel junction devices, Hall effect sensors, flux sensing coils, magnetostriction sensors and magneto optic sensors.

5. The method of claim 3 wherein the micro machined optical element includes a fixed portion and at least one sensor further includes one or more magnetic sensors disposed on the fixed portion.

6. The method of claim 5 wherein the magnetic sensor disposed on the fixed portion is disposed on a sidewall of the fixed portion.

7. The method of claim 5 wherein the fixed portion includes a base and the magnetic sensor that is disposed on the fixed portion is disposed on the base.

8. The method of claim 5 wherein the fixed portion includes a top chip and the sensor is disposed on the top chip.

9. The method of claim 5 wherein the sensor that is disposed on the movable portion and the sensor that is disposed on the fixed portion are electrically coupled in a bridge circuit

10. The method of claim 9 wherein the bridge circuit is a Wheatstone bridge circuit.

11. The method of claim 1 wherein the magnetic sensor senses a sense magnetic field that is separate from a magnetic field that actuates the micro machined optical element.

12. The method of claim 11, wherein a magnetic structure disposed on the micro machined optical element creates or changes the magnitude or direction of the sense magnetic field.

13. The method of claim 12, wherein the at least one magnetic sensor is selected from the group consisting of , magneto resistive sensors, giant magnetoresistance sensors, colossal magnetoresistance sensors, anisotropic magnetoresistance sensors, magnetic tunnel junction devices, Hall effect sensors, flux sensing coils, magnetostriction sensors and magneto optic sensors.

14. The method of claim 12 wherein the at least one magnetic sensor includes a magnetoresistive sensor characterized by a serpentine shape.

15. The method of claim 12 wherein the at least one magnetic sensor includes two or more magnetic sensors.

16. The method of claim 15 wherein the two or more sensors are coupled together in a bridge circuit.

17. The method of claim 16 wherein the bridge circuit is a Wheatstone bridge circuit.

18. The method of claim 11 wherein the micro machined optical element includes a moveable portion wherein the moveable portion is moveable with respect to an axis.

19. The method of claim 18 wherein the magnetic material is disposed substantially parallel to the axis.

20. The method of claim 19 wherein the at least one sensor includes a magnetoresistive sensor;
wherein the magnetoresistive sensor has a "C" shape having a gap;
wherein, in at least one position of the moveable element, the magnetic material is disposed within the gap.

21. The method of claim 18 wherein the magnetic material is disposed substantially perpendicular to the axis.

22. The method of claim 21 wherein the at least one sensor includes a magnetoresistive sensor;
wherein the magnetoresistive sensor has a "C" shape having a gap;
wherein, in at least one position of the moveable element, the magnetic material is disposed within the gap.

23. The method of claim 1, further comprising:
measuring a temperature; and
compensating for a change in the property of the at least one magnetic sensor with temperature.

24. The method of claim 23, wherein the compensating step includes determining a relationship between the property of the magnetic sensor and the measured temperature.

25. The method of claim 23, wherein the compensating step includes regulating the temperature to maintain the temperature within a desired range.

26. A method for measuring the position of a micro machined optical element, the micro machined optical element having at least one magnetic sensor, the method comprising:
a) exposing the at least one magnetic sensor to a magnetic field; and
b) measuring a change in a property of the at least one magnetic sensor as a position of the micro machined optical element changes.

27. The method of claim 26, further comprising:

measuring a temperature; and

compensating for a change in the property of the at least one magnetic sensor with temperature.

28. The method of claim 27, wherein the compensating step includes determining a relationship between the property of the magnetic sensor and the measured temperature.

29. The method of claim 27, wherein the compensating step includes regulating the temperature to maintain the temperature within a desired range.